

Appl. No. : 09/997,895
Filed : November 30, 2001

AMENDMENTS TO THE CLAIMS

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Currently amended) An optical bio-disc, comprising:

a substrate having encoded information associated therewith, the encoded information being located on the bio-disc and configured so as to be readable by a disc drive assembly to control rotation of the disc;

an antechamber associated with the substrate;

a separation ~~tube~~-chamber associated with the substrate, the separation ~~tube~~ chamber in fluid communication with the antechamber and configured such that a first portion of the separation chamber is closer to the antechamber than a second portion of the separation chamber;

a fluid outlet port located between the first and second portions of the separation chamber at a position selected to permit outward transmission therethrough of a liquid component of a particulate suspension when the suspension is contained in the separation chamber and when the substrate is rotated in response to the encoded information, while substantially preventing outward transmission therethrough of a particulate matter component of the suspension;

a metering chamber associated with the substrate, the metering chamber in fluid communication with the fluid outlet port of the separation tube~~chamber~~ so as to receive the liquid component of the suspension that is transmitted through the fluid outlet port; and

Appl. No. : 09/997,895
Filed : November 30, 2001

an assay zone associated with the substrate, the assay zone in fluid communication with the metering chamber and configured so that when ~~a~~the particulate suspension including ~~a~~the particulate matter component and ~~a~~the liquid component is deposited into the antechamber, rotating the substrate in response to the encoded information delivers a metered amount of the liquid component to the assay zone.

12. (Currently amended) An optical bio-disc, comprising:

a substrate having a center and an outer edge, and having encoded information associated therewith, the encoded information being located on the bio-disc and configured so as to be readable by a disc drive assembly to control rotation of the disc;

an antechamber associated with the substrate;

a separation tube associated with the substrate, the separation tube in fluid communication with the antechamber and configured such that a first portion of the separation tube is closer to the antechamber than a second portion of the separation tube;

~~a metering chamber associated with the substrate, the metering chamber in fluid communication with the separation tube;~~

a fluid outlet port located between the first and second portions of the separation tube at a position selected to permit outward transmission therethrough of a liquid component of a particulate suspension when the suspension is contained in the separation tube and when the substrate is rotated in response to the encoded information, while substantially preventing outward transmission therethrough of a particulate matter component of the suspension;

a metering chamber associated with the substrate, the metering chamber in fluid communication with the fluid outlet port of the separation tube so as to receive the liquid component of the suspension that is transmitted through the outlet port;

an assay zone associated with the substrate, the assay zone in fluid communication with the metering chamber; and

a waste chamber associated with the substrate, the waste chamber in fluid communication with the metering chamber and configured so that when ~~a~~the particulate suspension including ~~a~~the particulate matter component and ~~a~~the liquid component is deposited into the antechamber, rotating the substrate in response to the encoded

Appl. No. : 09/997,895
Filed : November 30, 2001

information delivers a metered amount of the liquid component to the assay zone while an excess amount of the liquid component is delivered to the waste chamber.

13. (Canceled).

14. (Original) The optical bio-disc of claim 11 wherein the disc drive assembly includes a read beam enabled to analyze the liquid component in the assay zone.

15. (Currently amended) A fluidic circuit in a substrate of a bio-disc for separating and metering a liquid component of a particulate suspension from particulate matter associated therewith, the substrate and fluidic circuit comprising:

encoded information located on the bio-disc and in proximity to the substrate, the encoded information configured so as to be readable by a drive assembly to control rotation of the substrate;

an antechamber;

a separation tube in fluid communication with the antechamber and configured such that a first portion of the separation tube is closer to the antechamber than a second portion of the separation tube;

a fluid outlet port located between the first and second portions of the separation tube at a position selected to permit outward transmission therethrough of the liquid component of the particulate suspension when the suspension is contained in the separation tube and when the substrate is rotated in response to the encoded information, while substantially preventing outward transmission therethrough of the particulate matter component of the suspension;

a metering chamber in fluid communication with the fluid outlet port of the separation tube so as to receive the liquid component of the suspension that is transmitted through the outlet port;

an assay zone in fluid communication with the metering chamber; and

a waste chamber in fluid communication with the metering chamber so that when ~~a~~the particulate suspension including ~~a~~the particulate matter component and ~~a~~the liquid component is deposited into the antechamber and when the substrate is rotated in response to the encoded information, the particulate suspension is caused to flow through the separation tube and the metering chamber delivers a metered amount of the liquid

component to the assay zone while an excess amount of the liquid component is delivered to the waste chamber.

16. (Original) The fluidic circuit of claim 15 wherein the particulate suspension includes a blood sample, the particulate matter component includes at least one from the group of white blood cells and red blood cells, and the liquid component includes serum.

17. (Original) The fluidic circuit of claim 15 wherein the particulate suspension includes a urine sample, the particulate matter component includes at least one from the group of epithelial cells, casts, and bacteria, and the liquid component includes clarified urine.

18. (Original) The fluidic circuit of claim 15 wherein the particulate suspension includes an environmental water sample, the particulate matter component includes at least one from the group of dirt, biological matter, particulate contaminants, and bacteria, and the liquid component includes clarified water.

19. (Original) The fluidic circuit of claim 16 wherein when the disc is processed in an optical drive, a read beam is directed at the assay zone to analyze the serum.

20. (Original) The fluidic circuit of claim 17 wherein when the disc is processed in an optical drive, a read beam is directed at the assay zone to analyze the clarified urine.

21. (Original) The fluidic circuit of claim 18 wherein when the disc is processed in an optical drive, a read beam is directed at the assay zone to analyze the clarified water.

22. (Original) The fluidic circuit of claim 15 wherein the particulate suspension includes a blood sample, the particulate matter component includes at least one from the group of white blood cells and red blood cells, and the liquid component includes serum.

23. (Original) The fluidic circuit of claim 15 wherein the particulate suspension includes a urine sample, the particulate matter component includes at least one from the group of epithelial cells, casts, and bacteria, and the liquid component includes clarified urine.

24. (Original) The fluidic circuit of claim 15 wherein the particulate suspension includes an environmental water sample, the particulate matter component includes at least one from the group of dirt, biological matter, and particulate contaminants, and the liquid component includes clarified water.

25. (Original) The fluidic circuit of claim 22 wherein when the disc is processed in an optical drive, a read beam is directed at the assay zone to analyze the serum.

Appl. No. : **09/997,895**
Filed : **November 30, 2001**

26. (Original) The fluidic circuit of claim 23 wherein when the disc is processed in an optical drive, a read beam is directed at the assay zone to analyze the clarified urine.

27. (Original) The fluidic circuit of claim 24 wherein when the disc is processed in an optical drive, a read beam is directed at the assay zone to analyze the clarified water.

28. (Canceled)

29. (Canceled)

30. (Original) The optical bio-disc of claim 11 wherein the particulate suspension includes a sample of amniotic fluid, the particulate matter component includes at least one from the group of sloughed cells, cell debris, cells, vernix, and bacteria, and the liquid component includes clarified amniotic fluid.

31. (Original) The optical bio-disc of claim 11 wherein the particulate suspension includes a sample of cerebrospinal fluid, the particulate matter component includes at least one from the group of cell debris, cells, clots, and bacteria, and the liquid component includes clarified cerebrospinal fluid.

32. (Original) The optical bio-disc of claim 11 wherein the particulate suspension includes a sample of synovial fluid, the particulate matter component includes at least one from the group of cell debris, cells, clots, and bacteria, and the liquid component includes clarified synovial fluid.

33. (Original) The optical bio-disc of claim 11 wherein the particulate suspension includes a sample of pleural fluid, the particulate matter component includes at least one from the group of cell debris, cells, lipid, and bacteria, and the liquid component includes clarified pleural fluid.

34. (Original) The optical bio-disc of claim 11 wherein the particulate suspension includes a sample of pericardial fluid, the particulate matter component includes at least one from the group of cell debris, cells, lipid, and bacteria, and the liquid component includes clarified pericardial fluid.

35. (Original) The optical bio-disc of claim 11 wherein the particulate suspension includes a sample of peritoneal fluid, the particulate matter component includes at least one from the group of cell debris, cells, lipid, and bacteria, and the liquid component includes clarified peritoneal fluid.

Appl. No. : **09/997,895**
Filed : **November 30, 2001**

- 36. (Canceled)
- 37. (Canceled)
- 38. (Canceled)
- 39. (Canceled)
- 40. (Canceled)
- 41. (Canceled)
- 42. (Canceled)
- 43. (Canceled)
- 44. (Canceled)
- 45. (Canceled)
- 46. (Canceled)
- 47. (Canceled)
- 48. (Canceled)
- 49. (Canceled)
- 50. (Canceled)
- 51. (Canceled)
- 52. (Canceled)
- 53. (Canceled)
- 54. (Canceled)
- 55. (Canceled)
- 56. (Canceled)
- 57. (Canceled)

58. (New) An optical bio-disc as defined in Claim 11, further comprising an excess fluid outlet port connected to the metering chamber such that liquid in excess of a selected amount is communicated out of the metering chamber.

59. (New) An optical bio-disc as defined in Claim 12, further comprising an excess fluid outlet port connected to the metering chamber such that liquid in excess of a selected amount is communicated out of the metering chamber.

Appl. No. : **09/997,895**
Filed : **November 30, 2001**

60. (New) An optical bio-disc as defined in Claim 15, further comprising an excess fluid outlet port connected to the metering chamber such that liquid in excess of a selected amount is communicated out of the metering chamber.